

Application

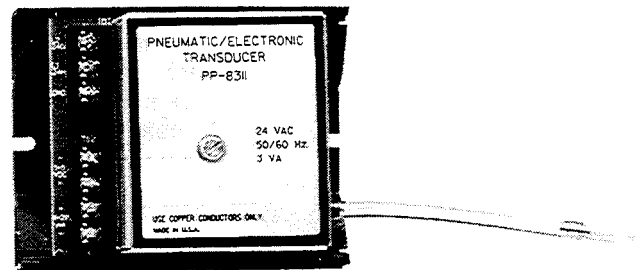
This PP-8311 Series Pressure Transducer converts a 3 to 15 psig (21 to 103 kPa) or a 0 to 20 psig (0 to 137 kPa) pneumatic input signal to a proportional 4 to 20 mA_{dc} or 1 to 5 V_{dc} electrical output signal.

Features

- 4 to 20 mA_{dc} load capability to 625 ohm maximum
- Dual outputs for 4 to 20 mA_{dc} and 1 to 5 V_{dc}
- 3 to 15 psig factory calibrated
- Does not consume any air
- Can be calibrated for 0 to 20 psig
- Requires less panel space than former model

Applicable Literature

- Cross-Reference Guide F-23638
- Reference Manual F-21683
- Application Manual F-21335
- Electric/Electronic Products Catalog F-27382



SPECIFICATIONS

Transducer Inputs

Input Signal:

Factory Setting, 3 to 15 psig (21 to 103 kPa).

Adjustable to, 0 to 20 psig (0 to 37 kPa) by recalibration.

Load Impedance Capability: 4 to 20 mA output 625 ohms maximum 1 to 15 volts output 1,000 ohms minimum.

Maximum Supply Air Pressure: 30 psig (207 kPa).

Operating Characteristics:

Linearity, $\pm 0.75\%$ of span.

Hysteresis, $\pm 0.25\%$ of span.

Air Consumption: None.

Connections: Coded screw terminals and one barbed fitting for 1/4" O.D. plastic tubing.

Transducer Outputs

Electrical:

Output Signal, 4 to 20 mA_{dc} and 1 to 5 V_{dc}.

Supply Voltage, See Table-1.

Mechanical:

Action, Direct Acting (D.A.), output rises as input increases.

Adjustments: See Figure-1 and page 3.

Environment

Ambient Temperature Limits:

Shipping & Storage, -40 to 160°F (-40 to 71°C).

Operating, 40 to 140°F (4 to 60°C).

Temperature Stability: Typically $\pm 0.03\%$ of output span per °F between 40°F and 140°F.

Humidity: 5 to 95%, non-condensing.

Location: NEMA Type 1.

Table-1 Model Chart for Pressure Transducers.

| Part Number | Transducer Power Input | | | |
|-------------------|------------------------|----|----|-----|
| | Voltage | Hz | | VA |
| PP-8311-024-0-0-1 | 24 Vac ($\pm 15\%$) | 50 | 60 | 2.5 |
| PP-8311-120-0-0-1 | 120 Vac (+10%/-15%) | | | 4.0 |

ACCESSORIES

TOOL-95-1 Pneumatic calibration tool kit

INSTALLATION

Inspection

Inspect the package for damage. If damaged, notify the appropriate carrier immediately. If undamaged, open the package and inspect the device for obvious damage. Return damaged products.

Requirements

- Job wiring and piping diagrams
- Tools (not provided):
 - Digital Volt-ohm Meter (DVM)
 - Appropriate screwdriver for mounting screws
 - Appropriate drill and drill bit for mounting screws
- Appropriate accessories
- Mounting screws (not provided)
- Training: Installer must be a qualified, experienced technician



▼ **WARNING**

Disconnect power supply before installation to prevent electrical shock and equipment damage.

Make all connections in accordance with the job wiring diagram, and in accordance with national and local electrical codes. Use copper conductors only.

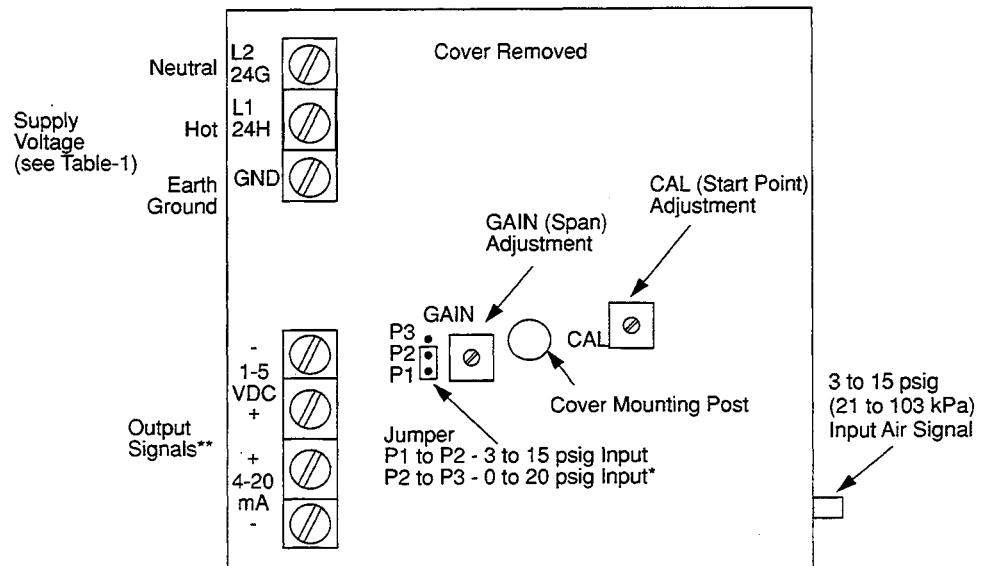
▼ **CAUTION**

- Avoid locations where severe shock or vibration, excessive moisture or corrosive fumes are present. NEMA Type 1 housings are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment.
- Do not exceed ratings of the device.
- Clean, oil free, dry air required (Refer to EN-123 Air Quality Requirements, F-22516 for more information). A refrigerated air dryer, particulate filter and a coalescing filter provide proper quality air.
- Synthetic or paraffin based oils will destroy pneumatic controls and void warranty.
- Transducer reliability/life will be affected if the air supply has particles larger than 0.03 microns.
- Compressor oil must be non-paraffin mineral or naphtha base.

MOUNTING

The PP-8311 must be mounted in an upright position. Both models are supplied with a piece of mounting track for panel mounting (see Figure-2 for dimensions).

Wiring and Piping



* When using 0 to 20 psig input (P2 to P3), GAIN and CAL adjustments must be made.
**Reference the caution below.

Figure-1 PP-8311 Series Pressure Transducer Terminal Designations Shown with Cover Removed.

Wire and pipe PP-8311 transducer in accordance with the job wiring diagram (see Figure-1 for terminal designations).

CAUTION

- The outputs for voltage and current do not have a common negative electrical reference. This means devices used with the PP-8311, when using both output capabilities, cannot be connected to devices which have a common (-) negative connection. Outputs 1 to 5 Vdc & 4 to 20 mA must not be connected to any external voltage sources and should only be connected to other devices or loads which are purely resistive.
 - When multiple PP-8311-024 units are powered from the same transformer, damage will result unless all 24G power leads are connected to the same power lead on all devices. It is mandatory that correct phasing be maintained when powering more than one device from a single transformer.
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ADJUSTMENTS

PP-8311 is supplied from the factory set for a 3 to 15 psig (21 to 103 kPa) input, 4 to 20 mAdc output and 1 to 5 volts simultaneously.

NOTE

If both 4 to 20 mA and 1 to 5 Vdc signals are used at the same time, the circuits receiving their respective signals must be isolated and floating.

Changing from 3 to 15 psig (21 to 103 kPa) to 0 to 20 psig (0 to 137 kPa)

TOOL-95-1 and a DWM are recommended for the following procedure to be accurate (see Figure-1):

1. Remove transducer cover.
2. Move the jumper from the P2 to P3 pin.
3. Adjust input pressure to 0 psig (0 kPa).
4. Adjust the CAL (start point) potentiometer to obtain 4 mAdc or 1 Vdc output.
5. Change input to 20 psig (137 kPa).
6. Adjust the Gain (span) potentiometer to read 20 mAdc or 5 Vdc at the output.
7. To increase the CAL (start point) and GAIN (span) turn the set screws in the clockwise direction.
8. After the initial adjustments have been made, repeat steps 3 through 6 to trim the output due to the interaction between the two adjustments.
9. Replace transducer cover.

NOTE

The desired system accuracy determines the number of high low adjustments for precise input to output performance.

CHECKOUT

1. Verify that the unit is mounted in the upright position.
2. Check input signal 3 to 15 psig (21 to 103 kPa) and supply voltage (per nameplate).
3. Check for foreign material (water, oil, dirt, etc.) in signal air. This is the most likely cause of any apparent miscalibration. If the pneumatic signal air is found to be contaminated, remedy this condition before installing a new transducer.

Supply Voltage



1. Check part number nameplate for correct supply voltage (refer to Table-1).
2. Measure with a DVM between terminals L1 (24 Vac H) and L2 (24 Vac G) for determining presence of correct AC supply voltage 24 Vac or 120 Vac.
3. Check power source for problems if supply voltage is not present.

WARNING

Never connect 120 Vac to the 24 Vac model or the 24 Vac to the 120 Vac model.

Transducer Operation

This is a rough functional check only.

1. Adjust the input signal to obtain maximum input pressure of 15 psig (103 kPa).
2. Output should be 20 mAdc or 5 Vdc.
3. Adjust the input signal to obtain minimum input pressure of 3 psig (21 kPa).
4. Output should be 4 mAdc or 1 Vdc.

NOTE

The PP-8311 is a highly accurate device. For applications requiring a high degree of accuracy, the use of laboratory quality meters and gauges are required.

MAINTENANCE

Regular maintenance of the total system is recommended to assure sustained optimum performance.

FIELD REPAIR

None. Factory repair is available.

WARRANTY

Contamination in transducer voids warranty.

DIMENSIONAL DATA

Dimensions shown in inches and millimeters.

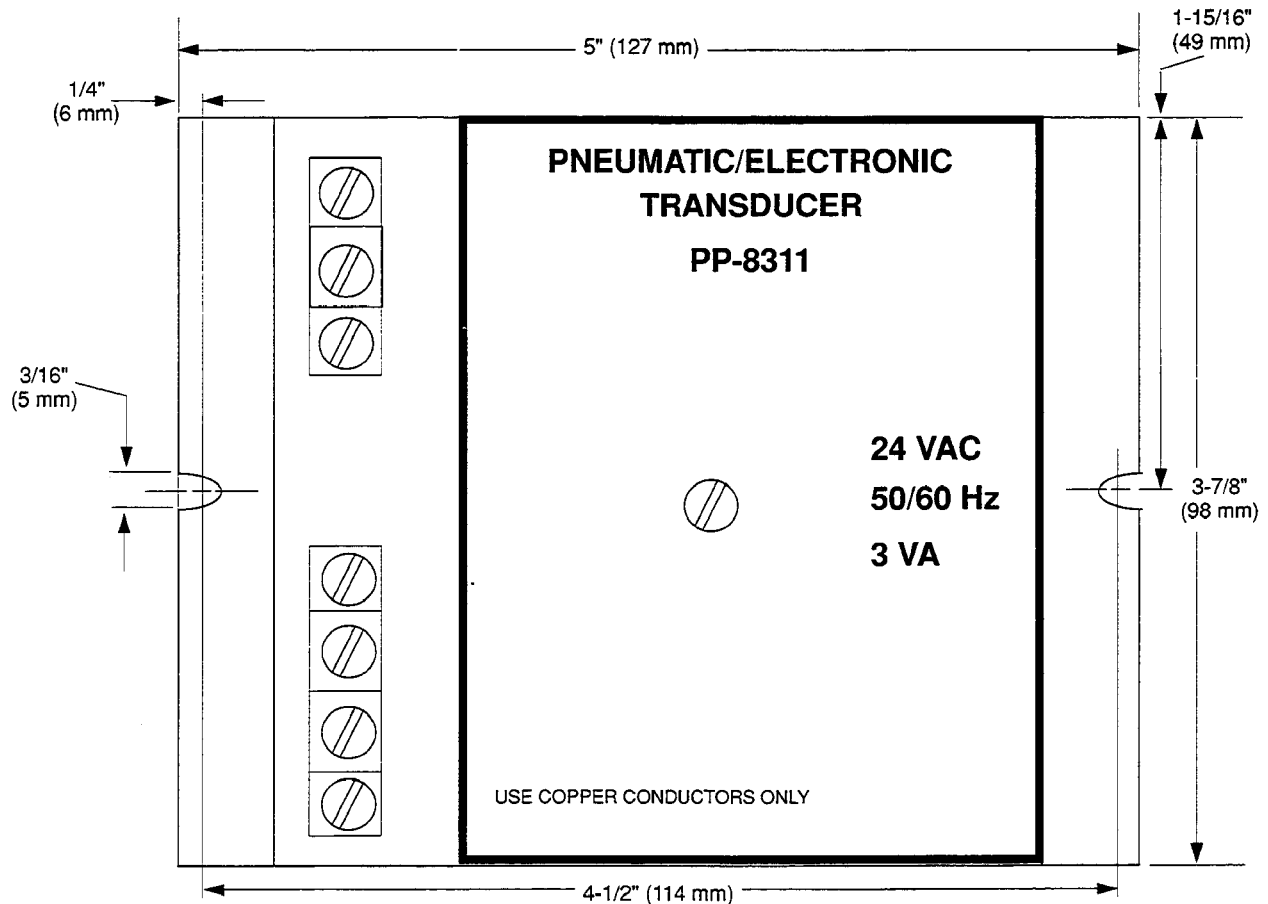


Figure-2 PP-8311 Mounting Dimensions.

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